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ABSTRACT

An annotated bibliography of studies in agricultural education, the edition contains 47 research studies completed during the calendar years 1973 and 1974 in the Pacific region States and submitted by teacher educators. (Some studies completed in 1972 but not previously reported are also included.) The summaries are arranged alphabetically by author; summary format includes purpose, method, and findings of the study. Distribution of papers by types revealed 11 staff studies and 36 masters' papers, with an overwhelming predominance of descriptive/survey studies. A popular research area was manpower and competency needs and employment opportunities (general and off-farm agricultural occupations), with 14 studies reported. Other research subjects included: administration and supervision; agricultural education in other countries; curriculum; educational programs (cooperative extension education and programs for high school students); evaluation; guidance, counseling, and testing; learning processes and teaching methods; and teacher education. (EA)

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ED109276

SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION

PACIFIC REGION

1973-1974

AN ANNOTATED BIBLIOGRAPHY OF STUDIES IN AGRICULTURAL EDUCATION

Department of Agricultural Education
College of Agriculture
The University of Arizona
Tucson, Arizona

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SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION

PACIFIC REGION

1973-74

Compiled by
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Issued by
The Department of Agricultural Education
College of Agriculture
University of Arizona

December, 1974

INTRODUCTION

This is the first Summary of Studies compiled since the issue edited by E. M. Juergenson in December, 1972. Thus, this edition contains studies completed during the calender years 1973 and 1974 in the states of the Pacific region and which were submitted by teacher educators. In addition, some studies completed in 1972, but not previously reported are included.

A total of forty-seven (47) research studies are included in this issue. It is interesting to note the distribution of papers by types. A total of eleven (11) staff studies were reported along with thirty-six (36) masters' papers. Of the staff studies reported, three were conducted through the experimental station.

A breakdown of the masters' papers reported shows that the majority (24) were theses. Others included research reports nine (9), and professional papers three (3).

An analysis of the summaries reveals the overwhelming predominance of descriptive/survey studies. Thirty-nine (39) of the studies reported were classified as descriptive, while six (6) were classified as experimental and two (2) as developmental. Several of those classified as experimental involved both development and evaluation. The evalutation was experimental in nature and the studies were therefore classified as experimental studies.

A perusal of the Subject Index provides an indication where the research effort has been directed. The general area encom-

passing "Manpower and Competency Needs and Employment Opportunities" was very popular with a total of fourteen (14) such studies reported.

Special thanks in the editing of this publication is owed to Mr. Ismael Gonzalez for his help in proof-reading and analysis.

Phillip Zurbrick
Coordinator, Summary of Studies
Pacific Region

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1. AMANAKI, Siope. A Comparison of Adoptors and Non-adoptors of an Approved Banana Growing Practice in Tonga Islands. Masters Thesis, 1974, University of Arizona, 63 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The purpose of this study was to investigate the characteristics of adoptors and non-adopters of approved banana growing practices in Tonga Islands and hence to determine the factors influencing the adoptors of such practices.

Method. A hundred and twenty growers were selected from the main island of the Tonga Group. Data were collected by means of interview conducted by extension workers of Tonga Department of Agriculture. The completed questionnaires were analyzed at the University of Arizona.

Findings. The following are some of the important findings of the study: (1) the growers who adopted the approved practices did so because they understood the practices, and those who rejected the practices did not know much about it; (2) adoptors learned more about the approved practices from their friends, neighbors, and relatives; (3) the majority of non-adoptors did not know who paid for the approved practices; (4) the adoptors accepted the approved practices because they believed it could be used on large plantations; (5) more non-adoptors indicated that they have been receiving an unfair price for their bananas whereas the adoptors satisfied with what they get for their bananas; (6) both adoptors and non-adoptors favored an increase in number of extension workers to be specialized in banana production; (7) the majority of banana growers preferred farm visit, short course, and extension information leaflets as a means of teaching the approved practices.

2. BISHOP, AMBERSON AND RICHARDSON. A Study to Determine Competencies Needed by Employees Entering Agricultural Mechanics Occupations. Staff Study, 1973, Montana State University, 123 p. Agricultural and Industrial Education Department, Montana State University, Bozeman.

Purpose. The purpose of this survey was to determine the skills, attitudes and knowledge required for successful employment in twelve job titles in an agricultural machinery business. Specific objectives of the study were: (1) to identify the skills, attitudes and knowledge requirements for entry level employment in each of twelve job classifications and (2) to rate each competency on a scale of relative importance.

Method. A tentative list of competencies considered essential for prospective employees in the farm machinery centers for 12 job titles was compiled. Farm machinery management, personnel and employees were asked to review the tentative list of competencies. The final list of competencies was validated using managers and employees not included in the final sample. Interviewers were trained to call on the group of agricultural machinery business respondents. The data were run on a modified computer program which provided a printout of each competency statement with its accompanying mean, median, standard deviation and frequency. In addition a weighted score was calculated for each competency.

Findings. The findings of the study indicated that: (1) The employee respondents and other respondents held a divergency of opinion as to the relative value of a large number of the competencies identified with each job title. (2) There was less difference of opinion among all respondents regarding the relative value of those competencies requiring a high level of mechanical skill as opposed to those competencies which involved d large number of people-oriented skills. (3) With the exception of the set-up man job title, the employee respondents and other respondents were in closer agreement on those competencies ranked in the lower 25 percent than they were on those competencies ranked in the upper 25 percent. (4) There appears to be a recognizable hierarchy of job titles within Montana Farm Machinery Dealerships with an identifiable group of competencies generally associated with each of the job titles. (5) More emphasis should be given to developing affective type competencies when training potential managers, supervisors, salesmen and partsmen. (6) A sizeable number of the tasks relative to overhaul and repair of farm equipment which require a highly skilled, technically trained persons will continue to be performed outside many farm machinery dealerships.

3. AMBERSON, BISHOP AND AGOCS. A Study to Determine Competencies Needed by Employees Entering Agricultural Production Occupations. Staff Study, 1973, Montana State University, 185 p. Agricultural and Industrial Education Department, Montana State University, Bozeman.

Purpose. The purpose of the survey was to obtain information to identify the knowledge, skills and attitudes needed by agricultural employees in agricultural production.

Method. A list of competencies considered essential for those employees engaged in 34 job titles in production agriculture was prepared. The instrument was validated using consultants representing the various job titles. Interviewers were trained. A sample of 177 producers who hired employees was identified. Valid returns were received from 134 contacted. Those respondents contacted were asked to respond to the competencies identified for the workers they employed. Competencies were ranked within job titles by means of a weighted score.

Findings. The findings of this study indicated that: (1) Job titles in agricultural production are not mutually exclusive. In most instances job overlaps exist. (2) The relative importance of ratings assigned to competencies essential for entry level agricultural production workers by persons performing the job title and others closely associated with the same job title were not statistically different. (3) The identification of competencies essential for agricultural production entry level workers provides valuable information for evaluating programs and for counseling students. (4) The study discloses a ranking of competencies required for entry level employment in agricultural production.

4. AMBERSON, BISHOP AND AGOCS. A Study to Determine Competencies Needed in Selected Job Titles in Agricultural Products Occupations, Staff Study, 1973, Montana State University, 211 p. Agricultural and Industrial Education Department, Montana State University, Bozeman.

Purpose. The purpose of this study was to obtain information which would identify the knowledge, skills and attitudes needed by employees in selected job titles in the bakery, dairy, meat and flour milling industries in Montana.

Method. A representative sample of Montana agricultural products industries representing several commodities was selected. The selected industries were surveyed to determine the job titles and number of persons working in the various job titles. Competencies were identified for workers in the bakery, dairy, meat and milling industries. Interviewers were used to gather the data from 81 respondents. All competencies were ranked on the basis of a Mean Rating.

Findings. The findings of this study indicated that: (1) Agricultural products industries have breadth and complexity, involving professional, technical and vocational occupations for which employees are required to possess varying degrees of knowledge, skills and attitudes for successful performance. (2) Competencies for job titles in the bakery, meat, dairy and flour milling industries were defined somewhat more broadly than were the competencies contained in previously completed Agricultural Manpower Studies because of the large number of job titles involved and because the researcher lacked familiarity in the area. Based on the ratings it would appear that competencies rated were important to the particular job titles studied. (3) Project interviewers indicated that persons in agricultural products industries were less sincere in responding to competency instruments as compared to employees in agricultural production and mechanics. (4) There was a tendency for persons in job titles below the management level to rate their specific duties higher than broad, general principles about their job. Example: Competency 96, "Inspect filled container to insure packaging according to specifications" was rated by Plant Workers or Machinery Operators and received the highest mean rating, whereas Competency 72, "Trend machine that performs one or more packaging functions" was rated eighteenth in importance and is an overall description of their job. This indicated that these persons were more aware of specific job duties than an overall picture of their job as it related to the entire production or processing operations. Conversely, Managers and Supervisors rated general, broad principles relating to the overall production or processing operation as being paramount. (5) Personal Qualities Competencies are competencies needed by all employees in varying degrees across the four industries. (6) The smaller the business, the more competent employees need to be in a greater number of knowledge and skills. (7) There are many competencies which are common across industry lines. Conversely, there are specific competencies required for employment in job titles indigenous to a particular industry and

closely identified with the product handled. (8) Competencies identified as being important for entry into the agricultural products industries provide information essential for evaluating programs and for advising students.

5. BARNEY, Willard Buren. Dissemination Effectiveness of Selected Arizona Garden Guides with Implications for Future Guide Development and distribution. Thesis, M.S., 1972, University of Arizona, 125 pages, Library, University of Arizona, Tucson.

Purpose. To determine the effectiveness of selected Arizona Garden Guides in disseminating information from the Cooperative Extension Service to garden club members in Tucson, Arizona with implications for future guide development and distribution.

Method. A random sample was drawn from an accessible population of women's garden club members in Tucson, Arizona. Data analyzed were collected through personal interviews with 104 garden club members.

Findings. Major findings included the following: (1) Arizona Garden Guides were moderately effective in disseminating gardening information; (2) there was no statistically significant relationship between selected background characteristics of participants and dissemination effectiveness of these guides; (3) there was a statistically significant relationship between timeliness of guide topic and dissemination effectiveness of the guides; and (4) there was no statistically significant relationship between time of week guides were received and dissemination effectiveness of Arizona Garden Guides.

Attention was also given to the topics, format, and distribution procedures of Arizona Garden Guides in an effort to provide a basis for improving their development and distribution. Gardening subjects of value as topics for future Arizona Garden Guides were identified. Illustrations and type of guide headings were the most important format items. Other format considerations examined were preference for: type of illustrations and explanations, paper and ink colors, and kind of type used.

6. BENSON, James Allen: Evaluation of Agricultural Education Advisory Councils in the State of Idaho. Thesis, M.S., 1973, University of Idaho, Moscow.

Purpose. The primary purpose of this study was to determine the success of agricultural department advisory councils in Idaho. In addition, this study may serve as an aid for agriculture teachers and advisory council members in the evaluation of the local advisory councils in Idaho. Methods of improvement for existing advisory councils could result from evaluative comparison. Also, this study could possibly serve as a guide for new advisory councils by which to organize and operate.

Method. An extensive review of literature was made related to the organization and operation of advisory councils. A questionnaire was then prepared and mailed to the Idaho vocational agriculture teachers who sponsor advisory councils and to agricultural advisory council members for their responses. The data obtained from eleven of the fifteen vocational agriculture teachers and from thirty-six of the sixty-six advisory council members were then summarized and analyzed.

Findings. Some of the major findings include: (1) The older and more experienced teachers were sponsoring advisory councils more often than younger teachers. (2) All eleven reporting teachers who sponsor advisory councils were non-voting members of the advisory council. (3) All eleven advisory councils had an agenda prepared prior to each meeting. (4) The average council member had completed two years of college. (5) The advisory council had assisted 82 percent of the agriculture teachers in understanding the problems of the community, according to the agriculture teachers. (6) Ninety-four percent of the advisory council members and 82 percent of the agriculture teachers were of the opinion that all agricultural departments should have an advisory council. (7) The professions and occupations of 72 percent of the council members were agricultural or agriculture related. (8) Minutes of the advisory council meetings were presented to the superintendent and principal by 73 percent of the councils. (9) The advisory council was a good public relations group between the agricultural department and the local community. (10) Most of the agricultural advisory councils in Idaho high schools have been successful.

7. BETZ, Eldon Hugh. Utilization of Time for School Affiliated Activities by Idaho Vocational Agriculture Instructors. Thesis, M.S., 1973, University of Idaho, Moscow.

Purpose. The primary purpose of this study was to determine how vocational agriculture instructors in Idaho utilized their professional time for school affiliated activities. In addition, this study may serve as a planning aid to prospective instructors, present instructors, and school administrators in the evaluation of the local vocational agriculture program in relation to professional activities and time allotments. Suggested methods of improvement on activity emphasis and time utilization could result from evaluative comparisons. This study did not investigate the time vocational agriculture teachers spent during the summer programs. It involved only the time devoted for school activities during the school term of the 1972-1973 school year.

Method. An extensive review of literature was made related to activities performed by secondary teachers and vocational agriculture instructors and the time they spend on school related activities. A questionnaire was then devised and mailed to the Idaho vocational agriculture teachers for their response. The data obtained from fifty-five of the seventy-three vocational agriculture instructors was then summarized and analyzed.

Findings. Some of the major findings include: (1) The average time spent weekly by Idaho vocational agriculture instructors for all professional activities was 53.8 hours during the week surveyed. (2) Over 80 percent of the professional time utilized by the respondents was devoted to those school affiliated activities related to vocational agriculture. (3) Approximately 14 percent of the total time spent for school affiliated activities by Idaho vocational agriculture teachers was spent on school related activities not related to vocational agriculture. (4) Less than 6 percent of the total time devoted to professional activities was spent on those school affiliated activities not specifically agriculturally or non-agriculturally related. (5) The average time spent on school days for professional activities by Idaho vocational agriculture teachers varied from seven to seventeen hours daily with nine hours and thirty-two minutes being the average time spent for each of the five days in the week. (6) One and six-tenths hours was utilized on Sunday, and 4.34 hours was spent on Saturday for professional activities by Idaho vocational agriculture teachers.

8. BISHOP, AMBERSON AND AGOCS. A Study to Determine Competencies in Selected Job Titles in Agricultural Resources Occupations, Staff Study, 1973, Montana State University, 185 p. Agricultural and Industrial Education Department, Montana State University, Bozeman.

Purpose. The purpose of the survey was to obtain information to identify the knowledge, skills and attitudes needed by agricultural employees in agricultural resources occupations.

Method. A list of competencies considered essential for those employees engaged in selected resources occcupations was prepared. Competencies were identified for soil conservation technician, civil engineering technician, dairy herd improvement supervisor and a federal food inspector. The instruments were validated using consultants representing the various job titles. Questionnaires were sent to 7 dairy herd supervisors, 36 soil conservation technicians, 17 civil engineering technicians and 60 federal food inspectors. All competencies were ranked on the basis of a Mean Rating.

Findings. The findings for the respective job titles included in this study indicated that:

1. Soil Conservation Technician:

   a. Competencies relating to personal qualities were given high ratings by the respondents.
   b. Competencies relating to the use of surveying equipment generally ranked in the upper 25 percent of competencies.
   c. Competencies requiring a detailed understanding of conservation practices and crop cultural practices were considered somewhat less important.

2. Civil Engineering Technician:

   a. Recording of survey data was considered very important by the respondents.
   b. Ten of the 13 competencies relating to personal qualities were ranked in the upper 25 percent of the competencies.
   c. Competencies relating to recommending conservation practices were ranked in the lower 25 percent.
   d. Competencies related to understanding and recommending cultural practices were generally in the lower 25 percent.

3. Dairy Herd Improvement Supervisor:

   a. The competency, Operating an Automobile, recieved the highest possible mean rating.

b. Other competencies receiving a 4.00 mean rating related to collecting, weighing and recording milk samples.
c. Two competencies in the upper 25 percent related to the use of the computer for recording data.
d. Competencies relating to dairy herd management were rated in the lower 25 percent.

4. Federal Food Inspector (Meat):

a. Competencies relating to the maintenance of clean, sanitary conditions within a plant were rated high among the competencies in the upper 25 percent.
b. Competencies associated with maintaining personal cleanliness among the employees were in the upper 25 percent.
c. Seven of the 13 competencies identified with personal work traits appeared in the upper 25 percent of the competencies.
d. Competencies relating to processing poultry products were ranked in the lower 25 percent.
3. Competencies relating to handling products for the export-import trade were rated in the lower 25 percent.

9. BOYD, Robert G. A Study of the Comparisons of the Costs of Vocational Agriculture Departments of Wyoming, Thesis, M.S., 1973, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The problem of the study was to determine operational cost of vocational agriculture departments in areas of Agricultural Mechanics, Classroom Instruction, Supervised Experience programs, and FFA.

Method. A questionnaire was mailed to the teachers of vocational agriculture in the secondary schools of Wyoming.

Findings. The study included teachers serving 50 percent of the students in vocational agriculture in the State. The following expenditures per student were identified: Travel - $26.94 (student travel - $12.71, teacher travel - $5.47, meetings - $2.46, and supervision - $6.28): Supplies $43.76 (classroom - $5.02, mechanics - $29.44, FFA - $6.80 and supervision $2.48): Equipment $23.56 (mechanics - $16.99, classroom - $6.20, and other $.37) Salaries $298.81.

Federal Funds. Seventy-four percent of students were benefiting from federal funds. Eight percent of departments were using innovative and Part G funds and seventeen percent were federally funded for adult education programs in agriculture.

New Facilities. Twenty-five percent of the departments constructed new facilities. The average cost per square foot, $14.07. The cost per foot for new construction, per student, on 20 year depreciation schedule was $63.37.

10. BRASTRUP, Robert George. Perceptions of the Awareness of the Montana Department of Agriculture as Held by Montana Agricultural Producers and Civic Leaders. Professional Paper, M.S. 1973, Montana State University, 207 p. Department of Agricultural and Industrial Education, Montana State University, Bozeman.

Purpose. The major purpose of the study was to determine the public's views about the Montana Department of Agriculture and determine the efforts the department had made to inform the public of its functions. Specific objectives of the study were: (1) to construct a partial history of the Montana Department of Agriculture; (2) to determine the awareness of Montana agricultural producers about the functions of the Montana Department of Agriculture and (3) to determine the awareness of Montana civic leaders about the functions of the Montana Department of Agriculture.

Method. Montana County Extension Agents were asked to suggest the names of five townspeople who were considered civic leaders and to suggest the names of ten agricultural producers. Opinionnaires were sent to a sample of 144 civic leaders and 240 agricultural producers. Concurrently with the collection of data, the organizational history of the Montana Department of Agriculture was developed from many sources but primarily from the annual and biennial reports of the Montana Department of Agriculture and the Laws of Montana which are printed for each legislative assembly.

Findings. More than 50 percent of the Montana Agricultural Producers were aware of the following divisions of the Montana Department of Agriculture; Agricultural Statistics, State Grain Laboratory, Weights and Measures, and Wheat Research and Marketing. Seven of the 8 total functions included in these divisions were familiar to more than 50 percent of the agriculture producers.

Sixty-nine percent of the Montana Agricultural Producers underestimated the level of the department budget and 72 percent overestimated the percent of the budget which is derived from state tax money.

More than 50 percent of the Montana Civic Leaders were aware of the Division of Weights and Measures and with two of the three functions of the division.

More than 50 percent of the Montana Agricultural Producers and more than 50 percent of the Montana Civic Leaders thought the areas of livestock health, agricultural pollution, meat inspection, dairy plant sanitation and the noxious weed law should be administered by the Montana Department of Agriculture even though these areas are not, at present, functions of the Department.

11. BURNHAM, Robert Lynn. Skills and Competencies for Job Entry in Production Agriculture in Polk County. MEd 1974, Oregon State University.

Purpose. In order to determine the involvement level expected of the high school Vocational Agriculture programs: (1) To establish a directional trend for employment opportunities of full-time farm employees in Polk County. (2) To identify and to list the entry level skills required by the local farm employers. (3) To revise the program in the Vocational Agriculture departments so that it will better provide students the technical entry level skills required for job placement in local farming operations.

Procedure. From the County Rural Directory, 185 farmers from Class 1 & 2 farms were selected. 25 of these were dropped from the list because they had gross sales of less than $20,000. The remaining 160 farmers were surveyed by questionnaire concerning the job competencies thought needed by a potential farm operator. Of the 160 surveyed, usable responses were received from 114.

Findings. The demand for competent farm labor in Polk County comes primarily from employee turnover and expanding farm operations. The entry level skills required of employees were analyzed and ranked according to their order of importance using a system of weighted scores. The higher the weighted ranking a skill received, the more important that skill became for receiving consideration in the curriculum. These weighted skills were then correlated with the present Vocational Agriculture curriculum at Dallas High School and the following curriculum adjustments were suggested:

1. Additional time allotments be made for the skill areas identified as "needing added emphasis."
    a. Human relations and communications
    b. Maintenance and repair of equipment
    c. Plant pests and pesticides
    d. Financing
    e. Livestock diseases.

2. Educational activities for the skill areas identified as "needing added emphasis" were developed.

3. Instruction dealing with the operation and adjustment of equipment to be added.

4. Deletions from specific instructional areas were made to allow room for the needed curriculum additions.

12. BUSBY, Marven L. Equipment, Facilities and Laboratory Management Practices for Implementing the Core Curriculum in Agricultural Mechanics for Arizona. Research report, M. Ag. Ed., 1973, University of Arizona, 70 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The study was designed to identify the physical facilities, equipment, and laboratory management practices and establish standards for agricultural mechanics laboratories in departments of vocational agriculture in Arizona in order to effectively implement and utilize the Construction and Maintenance Skills Unit of the Core Curriculum.

Method. A questionnaire was developed containing a list of tools and equipment required to teach each of the suggested lessons in the Core Curriculum unit in Agricultural Mechanics. Teachers were asked to indicate: the number of such tools on hand, the number they felt were needed, the safe student load capacity and other questions related to storage, financing, and length of class periods.

Findings. It was found that to implement the Core Curriculum in the area of Agricultural Mechanics a department should have: Fourteen (14) different kinds of individual tools, and seven (7) different tool equipment sets. The number of each of the above items varied from one (1) to ten (10).

A majority of schools received an annual budget for consumable supplies of over $900.00. The student-teacher ratio was found to be 20:1 for the largest classes, while teachers felt it should not be greater than 16:1. It was found that a majority of the teachers utilized laboratory assistants in shop classes.

The teachers indicated that a 55 minute period was adequate for first year students, but that it should be increased to 70 minutes for second year students.

13. CHURCH, Larry James. A Study of the Potential of the Junior and Senior Students Enrolled in Vocational Agriculture in the Boise Valley District To Become Established in Farming after Graduation from High School. Thesis, M.S., 1973, University of Idaho, 56 pp., Library, University of Idaho, Moscow.

Purpose. (1) To determine the percentage of junior and senior agriculture students in the Boise Valley District in 1970-1971 who have the potential to become established in farming. (2) To determine the size of the supervised farming project and the inventory value of each of these students. (3) To determine which boys may be able to secure financing and where this financing will originate. (4) To assess the desire of the student, and the teacher's interpretation of the parents' attitude toward a future in farming.

Methods. The data was collected from the eight vocational agriculture departments of the schools in the Boise Valley District. This data was obtained by survey and personal interview. Each junior and senior vocational agriculture student enrolled in 1970-1971 school term completed a questionnaire as did the instructor for each student completing the questionnaire. The following information was gathered: (1) student's year in school, (2) parental status in farming, type and size of farm, (3) student's desire to farm, (4) ability to obtain financing and its source, (5) college or higher education plans, (6) parent-son relationships, (7) productive projects and present inventory value of these projects, (8) student situation, (9) home farm situation, (10) parental situation, and (11) school situation.

Findings. This study revealed that 28.7 percent of the junior and senior vocational agriculture students in the Boise Valley District of the Future Farmers of America in 1970-1971 school year plan to farm as a life's occupation. The study also indicated that both the student and the vocational agriculture instructor believed that in 86.1 percent of the cases where a student wanted to farm, he could probably acquire the financing.

Of the students surveyed, it was also determined that 53.5 percent intended to seek a career in an agriculturally related occupation. These results indicate that vocational agriculture training continues to be an important part of the educational system in Idaho by influencing and training students for careers in farming and agriculturally related occupations.

14. COX, David Eugene. The Development and Evaluation of Instructional Units Dealing With Selected Principles of Animal Nutrition. Thesis, M.S., 1974, The University of Arizona, 82 pp. Main Library, The University of Arizona, Tucson.

Purpose. The purpose of the study was to develop and evaluate instructional units employing the principles approach and utilizing the inductive mode of teaching selected principles of animal nutrition to high school vocational agriculture students in grades nine and ten.

Method. The principles of animal nutrition included in the study were identified by a national jury of experts. The selected principles were grouped and instructional units were developed. Local vocational agriculture instructors who had previous experience using the inductive teaching mode utilized the developed units in grades 9 and/or 10 in the pilot schools. The instructional units were evaluated using the one-group, pretests-posttest design. An evaluative instrument developed through the study served as the pretest and the posttest. The relative change in student understanding as measured by the percent change in mean correct responses between the pretest and posttest was calculated.

Findings. Thirteen principles of animal nutrition were identified; five instructional units were developed, and an evaluative instrument possessing a reliability index of .81 was developed. Test results indicated an increase in student understanding between the pretest and posttest of 33.4 percent which was significant at the .05 level of confidence. Further analysis of data revealed there was no statistically significant difference in student understanding of selected principles of animal nutrition between freshmen and sophomore groups involved in the field testing program.

15. CRUM, Marvin and DOWLER, Lloyd. Agricultural Mechanics Study - Secondary Schools of California. Staff Study, 1974, California State University, Fresno, California.

Purpose. A study of the agricultural mechanics programs and their content was conducted to determine the types and kinds of curriculum being covered by the various vocational agricultural departments in the State of California.

Method. A questionnaire was mailed to every chairman of a vocational agriculture department in California and was requested that the individual teaching the agricultural mechanics courses complete and return the questionnaire.

Findings. The findings indicated that a wide variety of procedures were being used in teaching the skills assumed to be essential for students enrolled in either 1, 2, 3 or 4 year programs in agricultural mechanics. The results also indicated a definite need for semester courses in such subject matter areas as welding, small engines, farm power, surveying and farm structures. The study will be used as a ways and means of upgrading the agricultural mechanics programs in the State of California.

Summaries and results of the study have been made available to the State Department of Vocational Education, Sacramento, California. Copies of the study may be obtained from California State University, Fresno, California.

16. DONAHOO, Alvin W. AND AMBERSON, Max L. A Study to Determine Competencies Needed by Employees Entering Agricultural Supplies and Services Occupations. Staff Study, 1973, Montana State University, 55 p. Agricultural and Industrial Education Department, Montana State University, Bozeman.

Purpose. The farm service center is a growing part of the Agricultural Supplies and Services Area. Therefore, a study was instituted to determine the essential competencies that employees should possess before entering this segment of the Agricultural Supplies/Services Area, as viewed by management of farm service centers.

The competencies that management deems important will serve as a basis to revise existing curricula or to develop new courses of study. The revised, enriched course content will help to insure that students interested in entering the farm service area will have the competencies needed at the completion of their course of instruction.

Method. A tentative list of competencies considered essential for prospective employees in farm service centers was compiled. Farm service managers and educators preparing prospective employees were asked to review the tentative list of competencies. Additional consultants were asked to assist in the validation of the instrument. Data were collected from persons in Montana, North Dakota, South Dakota and the Red River Valley of Minnesota. The ranking of the competencies was determined by means of a weighted score for each section of the study.

Findings. The findings of the study indicated that: (1) Certain personal qualities and attitudes are important. (2) Farm and ranch experience after age 16 was not considered important for new employees. (3) Competencies requiring training in non-agriculture courses were given top priority. (4) Employees' backgrounds should include post-high school technical agriculture training in crop and livestock production. (5) Product knowledge and the ability to sell are vital. (6) The findings of the study of competencies needed for farm service center occupations are similar to findings of the Grain, Feed and Seed Business Study.

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17. DRAKE, Paul Marion. Program priorities of the Arizona 4-H Youth Foundation. Research Report, M. Ag. Ed., 1974, University of Arizona. 48 pp. Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The purpose of the study was to determine the preferences of four selected groups for program priorities of the Arizona 4-H Youth Foundation. The groups consisted of (1) The Arizona Cooperative Extension Service Administrative Staff (6 persons). (2) Arizona Extension Agents working in 4-H (51 persons). (3) Presidents of Arizona's County 4-H Leaders' Organizations (14 persons). and (4) The Arizona 4-H Youth Foundation Board of Directors (25 persons).

Method. A modified Delphi technique was used in two questionnaires to gather the opinions of the four selected groups. Ten program priorities were identified and ranked by each of the four groups. Rankings by groups were compared and a consensus of all groups was established.

Findings. The consensus of ninety-six persons in the four groups studied ranked the priorities as follows: (1) Leadership Development. (2) Citizenship Programs. (3) State 4-H Camp. (4) Trial of New Ideas. (5) Low Income Youth. (6) General Program Improvement. (7) Scholarships For Learning Activities. (8) T.V. Programs. (9) Trips and Awards. (10) International Youth Exchange.

18. ESLINGER, Michael Ray. An Assessment of Vocational Agricultural Cooperative Work Experience Programs in Oregon High Schools. M. Ed., 1974, Oregon State University.

Purpose. The purpose of this study was to determine the program structure, program involvement, program planning, and use of available resources of cooperative work experience programs in Oregon high schools by assessing the existing agricultural cooperative work experience programs.

Data were collected from ninety Oregon high schools. Completed questionnaires were received from 65 or 72.2 percent of the schools and 41 or 63.1 percent of those schools reported having an agricultural cooperative work experience program.

Findings. (1) All Oregon high schools with agricultural programs should adopt a supervised cooperative work experience program in agriculture. (2) Each school should establish a plan for selecting its agricultural cooperative work experience students, centering the plan around the minimum age a student can enter a work experience and the minimum personality development standards a student must have to enter the real work world. (3) The final selection of the agricultural cooperative work experience student should be made by the employer. (4) Each student participating in an agricultural cooperative work experience should have a signed training agreement listing the student, school, and parent responsibilities, the duration of the work period, and the schedule of work. (5) Each school should establish a plan or criteria check for selecting its agricultural cooperative work experience stations. (6) Adequate student supervision and supervision time should be provided during the academic year and during the summer. (7) Each agricultural cooperative work experience student should have a training plan developed by the supervising teacher, student and employer, and updated periodically to cover work experience changes. (8) Each school should develop a file on each agricultural cooperative work experience student. The file should contain the student's work permit verification if required, employer's evaluation, training plan, supervision reports, training agreements, hours of work completed, employment certificate date, and tractor operators permit. (9) In-service and pre-service instruction should be given on the development and maintenance of agricultural cooperative work experience programs.

19. GALE, Dwain A. The Design and Evaluation of an In-Service Educational Activity on Basic Horseshoeing for Teachers of Vocational Agriculture in Arizona. Research Report, Master of Agricultural Education, 1973, University of Arizona, 171 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The purpose of the study was to design and evaluate an in-service educational activity dealing with basic knowledge and skills of horseshoeing for teachers of vocational agriculture in Arizona.

Method. A teacher resource unit consisting of ten sequential lessons, including job operation sheets, was developed. An evaluative instrument, consisting of eighty-four multiple-choice questions, was designed to measure teacher understanding of subject matter related to basic horseshoeing. A two and one-half day workshop was conducted for ten teachers of vocational agriculture utilizing the developed teacher resource unit. The unit was evaluated using the one-group pretest-posttest design. The pre- and posttest scores of the workshop participants were compared to reveal the relative change in knowledge of basic horseshoeing. A teacher rating scale was utilized to assess the overall effectiveness of the in-service educational activity.

Findings. A teacher resource unit consisting of ten lesson plans was developed. Test results indicated an increase in teacher understanding of basic horseshoeing knowledge and skill between the pretest and posttest of 67.45 percent. The adaptability of the unit for teachers' need received a rating of "excellent." Nine of the ten teachers expressed that they possessed knowledge and skills necessary to teach a unit on basic horseshoeing.

20. GALLI, Ubirajara F. Agricultural Mechanization Instruction in the Agronomy Colleges of Brazil. A Basic Curriculum. Master's Thesis, M.S., 1973, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The purpose of this study was to determine the amount of agricultural mechanization included in present educational programs for preparing Engenheiro Agronomos in Brazil and recommend a basic curriculum in Agricultural Mechanization.

Method. Questionnaires were sent to the 17 Agronomy Colleges in Brazil requesting course descriptions in the area of agricultural mechanization.

The data were analyzed and compared to determine the extent of instruction in mechanics.

Findings. The major instructional areas studied in the Agricultural Mechanization curriculum for preparing Engenheiro Agronomos showed: (Farm Mechanics) instruction in simple machines, transmissions, and lubrication and bearings were adequate: (Farm Power) internal combustion engines were emphasized with limited instruction in other areas; (Farm Tractor) instruction on maintenance, repair and operation were limited. Little reference was made to animal powered machinery and the economics of farm power and machinery was very limited.

A wide difference existed among the colleges in this area of instruction.

21. HEWARD, John Richard. The Development and Evaluation of a Teacher Resource Reference on Meat Processing for Specialized Curriculum in Vocational Agriculture in Arizona. Research Report, Master of Agricultural Education, 1974, University of Arizona, 184 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The purpose of this study was to develop and evaluate a teacher resource reference on Meat Processing for use in teaching specialized curricula in Vocational Agriculture in the State of Arizona.

Method. The subject matter content for a resource reference on meat processing was identified. A teacher resource reference was then developed which consists of seven units. An evaluative instrument, consisting of sixty-one multiple-choice questions, was developed for measuring student understanding of subject matter related to meat processing. The posttest only - control group design was used in evaluating the teacher resource reference. An evaluation form and rating scale were used to obtain teacher reactions as to the subject matter information and mechanical make-up of two selected units from the teacher resource reference on meat processing.

Findings. The summary of findings from this study were as follows: (1) forty topic areas on meat processing were identified which should be used in the instruction of specialized curricula in vocational agriculture in Arizona; (2) there was a statistically significant increase in student understanding of meat processing subject matter between the control and treatment group; (3) the evaluative instrument was found to be an effective measure of student understanding of meat processing subject matter; (4) teachers which cooperated in the evaluation of the units rated subject matter information and mechanical make-up as acceptable for instruction of meat processing specialized curriculum in Arizona.

22. HILL, George Charles. A Study of the Procedures Used in Transferring Credits from Post Secondary Schools to Land Grant Universities of Minnesota, Texas, and Washington. Thesis, Master of Science, May, 1974, University of Idaho, pp. 80, Library, University of Idaho, Moscow.

Purposes. (1) To determine existing policies and actual procedures used by land grant universities for accepting agriculture credit from post secondary schools within their respective states. (2) To determine which policies and procedures, if any, are common to all three institutions included in the study for granting of agriculture credit transferred from post secondary schools. (3) To determine the problems agriculture students transferring from post secondary schools are having in transferring other credits such as English composition, mathematics and sciences. (4) To determine policies and procedures used in granting of credits for vocational-technical agriculture courses taken at post secondary schools. (5) To recommend a workable, uniform policy and actual procedures for use by the University of Idaho in granting credit for agriculture courses from post secondary schools within the state.

Methods. The data were obtained from completed questionnaire, received from Directors of Resident Instruction, or their representatives, in the Colleges of Agriculture at land grant universities in Minnesota, Texas and Washington from head agriculture instructors or school representatives, at selected post secondary schools in the states of Minnesota, Texas and Washington.

Findings. Annual conferences between land grant universities and post secondary schools concerning agriculture credit transfer were the only formal method of communication used by a majority of institutions.

A majority of institutions reported that land grant universities set minimum standards for transfer agriculture courses taught at post secondary schools.

The use of evaluation teams by land grant universities for evaluating post secondary transfer agriculture courses was minimal.

Evidence received indicated that there were no attempts by either land grant universities or post secondary schools to correlate the content of similar courses taught at the university and at post secondary schools.

There were no attempts by either group of institutions to correlate titles and numbers of similar courses taught at each institution.

Sixty-eight percent of the post secondary school representatives indicated that transfer of vocational-terminal agriculture

courses to the land grant university was possible. However, two of the three land grant universities reported that the transfer of such courses for credit was not possible.

Minimum academic training requirements for post secondary school instructors who teach transferrable agriculture courses vary greatly between states and institutions.

A 2.00 grade point average was required for a student to transfer from post secondary schools to the land grant university with no academic restrictions except in isolated cases.

The final authority for acceptance of transfer agriculture credits rests with either the Office of the Dean of the College of Agriculture or with the appropriate department within the College of Agriculture.

In only one state did any appreciable number of post secondary schools (44 percent) report that students were experiencing problems transferring associated credits such as English composition, sciences, and mathematics to the land grant university.

23. HOWELL, Michael Edward. A Study to Determine the Factors Associated with Enrollment Increases of Vocational Agriculture Departments in Idaho. Thesis, Master of Science, June, 1973, University of Idaho, pp. 45, Library, University of Idaho, Moscow.

Purpose. (1) To determine the degree of emphasis placed on certain factors associated with supervised farming and experience programs that had an effect on enrollment increases. (2) To determine the impact certain FFA activities were having on enrollment of vocational agriculture departments in Idaho. (3) To determine the areas of curriculum that had an effect on enrollment of vocational agriculture departments in Idaho. (4) To determine if additional instructors and facilities were needed for vocational agriculture departments in Idaho.

Method. To obtain the necessary data for this study, questionnaires were sent to fifty vocational agriculture instructors in Idaho. The questionnaires consisted of four main areas. Specific statements under each area identified the factors associated with enrollment increases.

The four main areas that dealt with enrollment increases were as follows: supervised farming and experience programs, FFA activities, curriculum and general factors. The agriculture instructors were asked to rate each statement under the four main areas by using a value rating of major, minor or no influence.

Findings. There were indications that more emphasis on cooperative off-farm experience programs was an important factor influencing increased enrollments.

From the information collected in the study, vocational shop work was considered to be a very major factor in increasing agricultural enrollments.

There was evidence that FFA activities, especially those involving competition and recognition among students who participated in the program, were major factors influencing increased enrollments.

A majority of vocational agriculture instructors indicated that improvements in equipment and facilities had a major influence on increasing their enrollment.

Sixty-two percent of the agricultural instructors believed there will be a need for additional instructors to meet the demands of increasing agriculture enrollments in Idaho.

24. HURLEY, Ben F. Utilizing High School Students in the Secondary Schools as Instructional Aides by the Montana Vocational Agriculture Instructors. Professional Paper, M.S. 1973, Montana State University, 42 p. Department of Agricultural and Industrial Education, Montana State University, Bozeman.

Purpose. The major purpose of the study was to identify the ways vocational agriculture instructors can utilize the students as instructional aides performing tasks closely akin but not directly involved with classroom instruction. The specific objectives of the study were: (1) to identify the ways high school students were utilized by Vocational Agriculture Instructors as aides during the 1972-73 school year, (2) to determine where, within the school, Vocational Agriculture instructors obtained their student aides, and (3) to determine if student aides received pay or academic credit for the activities they performed.

Method. The data were collected by use of a mailed questionnaire from 60 Montana Vocational Agricultural Instructors.

Findings. The findings revealed that 81.8% of Montana Vocational Agriculture teachers did use student aides. The aides received credit in 23 of the 45 schools where aides were used and were paid in only 3 schools.

The student aides were obtained mainly from the senior students and from the Vocational Agriculture and commercial departments.

Montana instructors used the student aides in the shop area more frequently than in other areas. Working with a small group while instructor was present was the major use of the student aides.

The responding instructors not using aides indicated they would use aides in about the same manner as the instructors who did use aides.

25. HYATT, Keith Russell: A Study of the Need for a Selective Farm Mechanics Program in the Meridian and Kuna High schools. Thesis, M.S., 1973, University of Idaho.

Purpose: (1) To determine to what extent selected farmers in the Kuna and Meridian districts maintained and repaired their own tractors. (2) To determine the tractor maintenance skills selected farmers believed should be taught to adult classes. (3) To determine the tractor maintenance skills selected farmers believed should be taught to high school vocational agriculture classes. (4) To develop a program of tractor maintenance and repair for the vocational agriculture program at the high school level. (5) To determine the jobs which should be done at the commercial repair shops.

Methods. The data was collected by questionnaires given to farmers in the Meridian and Kuna school districts. Information gathered included the following: (1) size of farm, (2) farming experience, (3) the availability of overhaul equipment on the home farm, (4) maintenance done at home, (5) mechanical experience, (6) commerical work performed on tractors, (7) interest in advanced study in farm mechanics, (8) outside labor hired to do repair work, (9) purchasing of repair parts and maintenance supplies, (10) the increased study of maintenance and repair in the high school vocational agriculture department, (11) opinions by those reporting concerning what jobs or skills should be: (a) done at home, (b) taught at high school, (c) taught at adult school, or (d) done at a service shop only.

Findings. The majority of the seventy farmers reporting stated they did minor repair work on their equipment, but due to a lack of time, facilities, and tools they did not do major work on their farm tractors.

Forty-three, or 62 percent, of the respondents reported they were below average in mechanical ability, and forty-three percent of those surveyed reported that they would enroll in a tractor maintenance and repair course taught to adult farmers.

A majority of those respondents reported that skills such as safety, electric systems, and general maintenance should be taught to students of vocational agriculture at the high school level. Of those farmers surveyed, a majority believed that jobs such as overhauling the engine, power train and hydraulic systems should be taught to adult classes only.

26. ITULYA, Francis Musyoka. Professional Competencies Essential for Beginning Extension Agents in Arizona. Thesis, Master of Science, 1973, University of Arizona, 106 pages, Main Library, University of Arizona, Tucson.

Purpose. The purpose of the study was to identify those professional competencies essential for beginning Agricultural Agents and Extension Home Economists in Arizona to possess.

Method. Data for this study were obtained by use of questionnaires which were mailed to all the 74 extension agents who were working at County level in Arizona as of January 4, 1973. Seventy-two questionnaires were returned, representing 97.30 percent of the expected number. The data were coded on IBM computer cards and analyzed accordingly.

Findings. Out of the 60 professional competencies selected for the study, fifty-six were identified as essential for beginning extension agents in Arizona, while three of them were recorded as "moderately essential" and one was considered as "inconclusive".

There was positive relationship between the competencies identified as essential for Agricultural Agents and those identified as essential for Extension Home Economists except in the case of four out of the 56 professional competencies identified as essential.

There was no relationship between the length of service the extension agents had been working as extension agents and the observed frequencies per rating scale.

27. JACOBS, Clinton O. An Appraisal of Competencies Needed by Teachers of Agricultural Mechanization. Staff Study, May 1972, Series No. 2, Department of Agricultural Education, 43 pages, The University of Arizona, Tucson, Arizona.

Purpose. To obtain an appraisal of 117 selected competencies in four areas of Agricultural Mechanization for the purpose of program and curricula development and to evaluate present and future teacher training programs in Agricultural Mechanization for Arizona.

Method. Data for the study were obtained by soliciting the response of a "jury of experts" consisting of a selected group of high school, area vocational and community college instructors by mail questionnaire. The teachers were requested to appraise each of the 117 competencies which represented the instructional areas of (1) Construction and Maintenance, (2) Power and Machinery, (3) Electric Power and Processing, and (4) Irrigation and Water Management. A five point rating scale was used to indicate the degree of competence needed by teachers of Agricultural Mechanization. A numerical mean value was calculated for each of the competencies for evaluation and statistical treatment.

Findings. An analysis of variance of the means indicated that there was no significant difference in the response of teachers due to the four geographic location of the 21 Western States from which the responses were received. It was determined that there was no significant difference in the competencies as appraised by the three teacher groups for the subject matter areas of Construction and Maintenance Electric Power and Processing, and Soil and Water Management. The variance in means for the area of Power and Machinery was significantly different for the three teacher groups at the .01 level. It was also determined that teachers of Arizona did not evaluate the competencies significantly different from teachers in the other states surveyed.

The data suggests that certain competencies in the subject matter area of Power and Machinery were more technically oriented to the training programs conducted in area vocational schools and community colleges.

Ninety-three of the competencies were appraised in the "considerable importance" and "absolutely essential" categories and were recommended for consideration in developing teacher education programs and for forming the basis for occupational and job analysis studies.

28. JACOBS, Clinton O. Effectiveness of Prepared Instructional Units in Teaching the Principles of Internal Combustion Engine Operation and Maintenance. Technical Bulletin 192, 1972, University of Arizona, 14 pages, Agricultural Experiment Station, University of Arizona, Tucson, Arizona.

Purpose. The study was initiated to (1) develop an instructional resource unit on the internal combustion engines for Arizona using the small single-cylinder, air-cooled engine as a teaching model and (2) to evaluate the effectiveness of the units.

Method. A teacher's manual, a student manual were both developed along with a list of suggested tools and equipment. Plans for a storage box for the individual engines and tools was also developed. Teachers were invited to participate in a two-day in-service workshop using the developed materials and recommended equipment. Teachers were asked to participate in the evaluation of the developed materials through a student testing program. The one-group pre-test, post-test design was utilized with the dependent variable being student understanding.

Findings. When the mean difference in number of correct responses between pre- and post-test scores was compared, the computed t value indicated that the difference in score was significant at the .001 level of significance. Students of teachers who had received in-service training in the use of small engines equipment and resource units had a statistically significant (.05 level) greater increase from pre- to post-test scores when compared to students' of teachers without such preparation.

Time of the year in which the unit was taught had a statistically significant effect upon the overall test score performance when F was compared at the .01 level. Students performance was better in the first and third quarters than in the second and fourth quarters.

Intelligence quotient of the students had low to moderate relationship to performance.

29. JENSEN, Robert R. A Course of Study Guide for Teaching Agricultural Science in Agricultural Education. Master's Report, Utah State University, 108 pages, U.S.U. Library, Logan, Utah.

Purpose. The major objectives of the study was to develop curriculum guides to provide a systemized approach in teaching basic agricultural science skills to high school students and in turn compliment the guides developed by the teachers of vocational agriculture in Utah. These curriculum guides which are used by the student to accomplish stated objectives, were designed in "behaviorial terms" with emphasis placed on learning activities.

Method. The method used was an attempt to add a more comprehensive vocational program to high schools in Utah. The Utah State Board of Vocational Education sponsored a three-year pilot program termed project SUCCESS. The vocational offerings in three Utah high schools were expanded to include specialty subjects as determined by the needs of the job market in the area and state. As a result, the format for nine state curriculum guides was established for teaching vocational agriculture subjects in specific agricultural areas.

Findings. Due to the fact that the number of students from production agricultural backgrounds is decreasing, it is making it necessary to expand the agricultural curriculum to include Agricultural Business, Ornamental Horticulture, Farm Management, Natural Resources, Processing, Distribution and other specialty courses.

These curriculum guides' contents are broken down by units. Units I and II cover material relating to the Future Farmers of America organization and the development of leadership ability. Units III and IV are designed to help establish students with production and occupational experience projects. Unit V covers the basic feeding and management of farm livestock. Unit VI deals with the selection, judging, fitting and showing of animals. The economics of plant production, types of crops, weed control and plant judging make up the basis of Unit VII. The formation of soils and oil fertility is covered in Unit VIII. Unit IX covers introductory materials relating to career selection, which are essential to success on the job. Unit X is an introduction to the methods of doing business, and Unit XI is designed to involve the student in community services.

It was found that the agricultural curriculum should be general in nature in the first and second years of high school with more specialized courses being taught during the junior and/or senior years.

30. JOLLEY, Darwin S. A Teaching Plan in Servicing Small Gasoline Engines Used for Work and Recreation. Master's Report, Utah State University, 71 pages, U.S.U. Library, Logan, Utah.

Purpose. The major objectives of this study was to consolidate all related information published in recent years on the 4-cycle and 2-cycle engines, and to put this information into a teaching form that could be used by the vocational agriculture instructor. The author has organized the course into jobs using the common format in teaching in Utah schools where we use a situation, objective, motivation, study guide, and references.

Method. The method was to decide on four enterprises which should be taught to the student of Agricultural Education, and in each enterprise determine the jobs to be taught for each enterprise and then to use a format that could be followed by the instructor in presenting information.

Findings. Over the past few years there has been a vast amount of information published on small engine overhaul and tune-up. Most of this information was directed to one particular manufacturer. In as much as a vocational agriculture teacher is working with all manufacturers, there are many techniques that have simularities and are not specific to the manufacturers design. The terminology between manufacturers is similar, and this information has been consolidated into one publication which can be put to practical use in teaching small engines to the agriculture high school students enrolled in vocational agriculture classes.

31. KERNER, Stanley Howard. A Study to Determine the Awareness of Idaho Guidance Counselors of Professional Opportunities in an Agricultural Education College Major. Thesis, M.S., 1974, University of Idaho, Moscow.

Purpose. The purpose of this study was to determine the awareness of Idaho secondary guidance counselors of professional opportunities in an agricultural education college major.

Method. A questionnaire was developed and sent to Idaho secondary guidance counselors. The results of this study were based on the opinions and situations of the 103 respondents.

Findings. About 50 percent of the counselors surveyed believed that over 90 percent of the University of Idaho graduates who wanted to teach were placed in teaching positions, when actually the University of Idaho Agricultural Education Department records for the past ten years show 100 percent of the graduates who wanted to teach have found teaching positions. Counselors who were in schools that had vocational agriculture departments spent approximately fifteen hours a year in contact with the agriculture teacher. The data revealed that fifty-six counselors believed they were only partially informed of the professional opportunities in agricultural education; yet sixty-nine counselors believed the professional opportunities in agricultural education were good to excellent. The main source of agricultural education career information used by ninety of the 103 counselors was the college catalog. The guidance counselors indicated they would like to receive pamphlets, lists of jobs and salaries, occupational trends, and general career information about agricultural education.

As a result of this study, it was recommended that the University of Idaho agricultural education personnel should do the following: (1) send counselors current career information on all phases of agricultural education biannually, (2) visit counselors in the state, particularly counselors who do not have a vocational agriculture department in their schools, (3) continually encourage further cooperation between vocational agriculture teachers and guidance counselors in Idaho.

The following recommendations were also made as a result of this study: (1) vocational agriculture teachers should continually try to project an image that encourages high school students to become teachers of vocational agriculture, (2) vocational agriculture teachers should more fully cooperate with guidance counselors and help supply counselors with information about career opportunities resulting from a degree in agricultural education, (3) guidance counselors should make an effort to secure more information about career opportunities in agricultural education, either from the vocational agriculture teacher at the high schools or from the University of Idaho, College of Agriculture, Department of Agricultural Education, and (4) further studies should be completed

involving a comparison of the guidance counselors' opinions in regard to a career in agricultural education considering the following possibilities: a) urban school counselors compared with rural school counselors, b) counselors with vocational agriculture departments in their schools compared with counselors without vocational agriculture departments, and c) the opinions of female counselors compared with male counselors.

32. MATTOX, Keith E. Factors Associated with the Rate of Vocational Agriculture Teacher Turnover in Arizona. Thesis, M.S., 1974, University of Arizona, 113 pages, Main Library, University of Arizona, Tucson.

Purpose. The purpose of this study was to identify possible factors which may have influenced teachers of vocational agriculture in Arizona to leave the vocational agriculture teaching profession between September 1, 1959 and September 1, 1972.

Method. The entire population of 58 former teachers of agriculture who left the profession in Arizona between September 1, 1959 and September 1, 1972 were utilized. Through a review of related literature and discussions with personnel in the educational field at The University of Arizona, forty-five (45) sociological, environmental, and professional exiting factors were synthesized. Data were obtained from a nine page questionnaire mailed to each former teacher. The former teachers were divided into two groups based upon years taught, and chi-square values were used to determine what factors influenced the teachers decision to exit the profession. Teachers who had taught one to four years were considered non-tenured teachers, whereas those who had taught five or more years were considered to have tenure.

Findings. Major findings included the following: "lack of advancement opportunities" influenced more teachers to leave the profession than any other single factor; teachers entered the profession because they enjoyed working in agriculture and with its people; teachers teaching five or more years indicated the "opportunity to plan and carry out an instructional program" and "prestige of position" had more influence on their decision to enter the profession than teachers teaching four or less years; teachers lacking tenure revealed that "dislike teaching certain subject areas", "too much preparation required for classroom teaching", and "contract not renewed" had more influence on their decision to leave the profession than teachers having tenure; teachers entering the profession at an older age were retained longer; the median years of tenure of all Arizona vocational agriculture teachers surveyed was 4.50 years; Arizona has a mean yearly teacher turnover rate of 10.91 percent, and of the 58 teachers who left the profession, 24, or 41.3 percent, remained in agriculture.

33. MERRICK, Lyn Carl. A Survey of Vocational Agriculture Shop and Classroom Tools and Equipment Needed for a Beginning Vocational Agriculture Program in the State of Idaho. Thesis, M.S. 1973, University of Idaho, 119 pp., Library, University of Idaho, Moscow.

Objectives. (1) To develop a list of tools and equipment needed for a beginning vocational agriculture department during the first year of operation. (2) To develop a priority classification list to aid instructors of existing departments in evaluating how well their departments were equipped. (3) To develop a minimum estimated cost list for the purchase of the required tools and equipment for a beginning vocational agriculture department.

Methods. Data were obtained by surveying the Idaho vocational agriculture instructors. The survey consisted of a priority ranking of 198 tool and equipment items usually found in a vocational agriculture department. The information obtained from the survey through the use of a computer program included: (1) The number of instructors answering each of the questions, (2) the per cent of instructors ranking each item in each of the five priorities. (3) a weighted number for each item on the survey, and (4) the mean and standard deviation for the weighted numbers. The mean and standard deviation were used to devise a classification system indicating the relative importance of the tools and equipment items. An estimated cost was obtained for each of the required items from various tool catalogs and by consulting local businesses in the Moscow, Idaho area.

Findings. Just under three-fourths or 142 items (71.4 per cent) were ranked as required tools and equipment for a beginning vocational agriculture program. For established departments, twenty-eight items (14.1 per cent) were classified as extremely important items to a department. Ninety items (45.5 per cent) were classified as very important items. Forty-seven items (23.8 per cent) were classified as important items. Twnety-four items (12 per cent) were classified as less important items. Only nine items (2.6 per cent) were classified as not important for a vocational agriculture department. The total low estimated cost for purchase of the required tool and equipment items equaled $442.44.

The preceding lists of required tools, priority classifications, and estimated cost were included in the text of the thesis.

34. McKEE, Thomas M. Competencies Necessary for a Beginning Golf Course Employee, Master's Report, Utah State University, 43 pages, U.S.U. library, Logan, Utah.

Purpose. The major objective of the study was to identify training competencies and skills in terms of tasks necessary for job-entry in golf course employment. The author sought to identify skill offerings for secondary vocational agriculture programs for purposes of better preparation for entry into golf course employment or articulation with a post-secondary ornamental horticulture program.

Method. The author used a list of functions - tasks developed by Berkley, Drake, and Legacy (1972), in surveying golf course managers or owners in proximity to Davis County high schools that have vocational agricultural programs. Six golf course managers or owners were interviewed. A survey instrument composed of task statements developed by Berkley, Drake, and Legacy (1972) was presented to employers for them to categorize as either not important, could learn on the job, or nonessential for high school age employees.

Findings. All six employers indicated a need for light maintenance of business vehicle or tractor pre-employment education. Five of six employers indicated a need for skill in care and sharpening of hand tools, lubrication of business vehicles and tractors, and calibration of spray rigs and fertilizer spreading equipment. Two-thirds of those interviewed rated important for high school age employees "clean and oil electric motors," "Maintain and repair small gas engines (e.g. lawn mowers, rototillers)."

Business tasks were rated important for entry level employment at a two thirds level for use effective interpersonal relationships in dealing with customers, one-half of the employers said keeping current inventory of repair parts, fertilizer, seed, and supplies is important. No other business task received an important rating by half or more of those interviewed. Business skills while important for golf course management did not receive as high ratings as the mechanical and ornamental technical tasks for entry employment.

Four ornamental horticultural tasks rated important by all six respondents were preparing lawn for seeding, mixing fertilizer into the soil, placing sod, and watering new plantings. Identificiation of weeds, insects, and diseases was felt to be important by 83 percent of the employers interviewed.

Chemical control of weeds, insects, and diseases were identified as important by two-thirds of the respondents. In all, some thirty three ornamental tasks were rated important by four or more of the six respondents.

A comparison of findings with a study of nursery production, farm and garden stores, landscape services and greenhouse production by Stevenson was made by the writer. Significant overlap can be

interpreted to indicate little need for a specialized curricula for golf course industry employees separate from an ornamental program.

35. MUNIU, Kamau Evanson. Plant and Animal Science Skills Essential for Small Scale Farmers in Nairobi/Mutuini. Thesis, Master of Science, 1973, University of Arizona, 100 pages, Main Library, University of Arizona, Tucson.

Purpose. The purpose of this study was to determine plant and animal science skills essential for small-scale farmers of Nairobi/Mutuini to possess.

Method. All one hundred twenty small-scale farmers of Nairobi/Mutuini were involved in the study. The information and data analyzed were collected through questionnaires that were mailed to Nairobi.

Findings. The following are some of the important findings of the study: (1) of the eighty-two plant and animal science skills, fifty-nine were determined to be essential; (2) the majority of small-scale farmers of Nairobi/Mutuini had little education beyond adult school preparation; (3) respondents with adult school education rated more plant and animal science skills with higher mean ratings than the respondents with primary or high school educational background; (4) part-time farmers rated more plant and animal science skills with higher mean ratings than by full-time farmers; and (5) chi-square indicated that there was an association between the background characteristics of the respondents and the rating of both plant and animal science skills considered in this study.

36. RYAN, John. A Comparison of Rural and Urban Attitudes Toward the Use of Chemical Insecticides in Pima and Pinal Counties, Arizona. Thesis, Master of Science, 1973, University of Arizona, 75 pages, Main Library, University of Arizona, Tucson.

Purpose. The study was conducted among farmers in Pima and Pinal counties and homeowners in the City of Tucson to determine the extent of use and knowledge of selected aspects of insecticides.

Method. A closed form questionnaire was used to obtain the necessary information. A random sample of 200 homeowners and 200 farmers were included in the study. Non-respondents were systematically sampled in an effort to increase the external validity of the study.

Findings. Valid response to the questionnaire was approximately 34 percent. The extent of insecticide use was greater among farmers. Urban homeowners, in general, were less favorably disposed toward the use of insecticides, believing them to be environmental pollutants and a threat to wildlife. More homeowners believed that insecticide residues were harmful to health and were willing to pay higher prices to avoid their use. Farmers were more aware of legislation dealing with insecticides. Both groups were generally unaware of public health facilities dealing with cases of insecticide poisoning. The principal sources of information concerning insecticides for homeowners were newspapers, television, and retail dealers while retail dealers, farm journals, and extension agents were the principal sources for farmers. Use of insecticides was associated with increased income while knowledge of insecticides was related to educational level and age.

37. SANDBERG, Terry. Agricultural Manpower Opportunities and Educational Needs for the Service and Supply Occupations in Wyoming. Master's Thesis, M.S., 1973, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The purpose of this study was to determine the employment opportunities and training needs for the following occupational families, agricultural equipment, supplies and services, building and construction, real estate and banking and agricultural government services.

Method. Personal interviews were conducted by current and prospective teachers of vocational agriculture in all communities in the State.

Findings. Twenty-five hundred workers were presently employed in 294 businesses. A 15 percent increase in opportunities for workers was predicted during the next five years. Job titles by occupational families showed: 46 in equipment; 77 in supplied and services; 47 in building and construction; 17 in real estate and 41 in government services.

38. SANDON, David Joseph. A Study of Perquisites to Montana's Full Time Farm and Ranch Employees. Professional Paper, M.S. 1973, Montana State University, 61 p. Department of Agricultural and Industrial Education, Montana State University, Bozeman.

Purpose. The major purpose of this study was to determine what perquisites were being provided, how much they cost the producer, and whether or not the producer felt they were of value in obtaining and keeping full-time help. Specific objectives of the study were: (1) to determine what types of operations provided housing, its quality and its estimated monetary value, (2) to identify those incentive programs being provided and to estimate their monetary value, (3) to determine what employee benefits are provided and estimate their monetary value, (4) to determine length of employment of present employees and relationsihp to the employer, and (5) to determine if the employer felt that perquisites have brought about changes in employee attitudes, quality of work performed and an increase in the profits to the employer.

Method. A sample of 180 producers was randomly drawn from a population of 444 producers who hired help in Montana. A questionnaire was mailed to each of the 180 producers in the sample requesting information relating to the type of perquisites they provided for their workers. Data were compiled statistically using a Chi Square test.

Findings. The major findings of the study indicated that: (1) Housing, vacations and leave of absence were provided by more than 90% of the respondents. (2) Incentive programs of one type or another were provided by 75% of the respondents. (3) Some type of insurance was provided by 74% of the respondents. (4) Benefits provided were felt to be valuable by 34% of the respondents, and 12% said they were very valuable.

39. SCHULTZ, Robert L. A Comprehensive Study of Students Not Enrolled in the College of Agriculture at the University of Idaho the Fall Semester of 1972 Who Had Previously Been Enrolled the Spring Semester of 1972 or Who Had Been Granted Permission to Enroll for the Fall Semester of 1972. Thesis, M.S., 1973, University of Idaho, 68 pp., Library, University of Idaho, Moscow.

Purpose. (1) To identify reasons that caused students not to return the fall semester of 1972 who were previously enrolled in the College of Agriculture during the spring of 1972. (2) To determine reasons for non-enrollment of new students who were granted permission to register and did enroll the fall semester of 1972. (3) To determine if a need for evaluation of programs in the College of Agriculture at the University of Idaho is needed.

Methods. The data were obtained for Part 1 of the thesis by questionnaires mailed to sixty students who had previously been enrolled during the spring semester of 1972 and did not enroll for the fall semester of 1972. The data for Part II of the thesis were obtained from questionnaires mailed to sixty new students who had been granted permission to enroll but did not register for the fall semester of 1972.

Findings. The first part of the study revealed that the majority of the students who had not returned to the College of Agriculture at the University of Idaho were single, under twenty-five years of age, and had completed four semesters of study. Of those who had not returned, 30 percent had transferred to another institution of higher learning, 16.6 percent were in the armed services, and 36.6 percent were employed, leaving 3.5 percent unemployed. Over one half of the respondents indicated that they would like to return to the University of Idaho at a later date.

Economics, curriculum offerings, and academic atmosphere were the major factors for not returning for the fall semester of 1972. A need for more vocational training and the amount of English and mathematics required of agricultural majors were reasons listed under curriculum for students not returning. The students who answered the survey expressed opinions that the University was too liberal on drinking, drugs, and cheating restrictions.

The information gathered in the second part of the study revealed that 76.6 percent of the respondents were students at another institution of higher learning. Economic status was the only factor which proved to be a consideration in making the decision not to enroll at the University of Idaho.

The writer concluded from the information derived from the second part of the study that the majority of the students who did not actually enroll had requested permission to enroll for the fall semester of 1972 at the University of Idaho to make certain that they had a school to attend in case they were not accepted by their number one college choice.

40. SMITH, Roddy J. A Follow-up Study of Agriculture Students from Wyoming Community Colleges. Thesis, M.S., 1974, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The purpose of the study was to determine the effectiveness of the agricultural education programs in Wyoming Community Colleges in the following areas; placement of students, program selection, and program improvement.

Method. A questionnaire was mailed to 651 agriculture students that had completed at least one semester at one of Wyoming's Community Colleges during the years 1968-1973.

Findings. Approximately eighty percent of the students returned to agriculture employment; 55.46 percent in production agriculture and 24.37 percent in agri-business. More than one-half of the former students thought the program was of assistance in obtaining their present employment.

Students selected the Community College agricultural program on the basis of proximity to home, past student recommendations and other reasons.

Eighty-seven percent of the students rated the program of agriculture above average in meeting their needs. Students indicated a need for practical veterinary training and agriculture business courses. The educational program could be improved most by the addition of more practical work and the deletion of unrelated required courses.

41. SNYDER, Donald L. Wyoming Manpower Opportunities and Employment Levels for the Renewable Natural Resource Occupations in Agriculture. Master's Thesis, M.S., 1973, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The purpose of the study was to identify the agricultural related businesses in the renewable natural resource cluster of occupations, determine present employment and projected opportunities and the job titles of people employed in this area of the agriculture industry.

Method. Personal interviews were conducted by vocational agricultural teachers in each of the counties in the State. The interview form was a combination open-closed type.

Findings. Two hundred and seven businesses were identified in this area where at least 45 percent of their income was from agriculture. Currently, some 2,087 people are employed with a 30% increase projected by 1978. Twenty-nine job titles were identified at the professional level, fifteen technical job titles, twenty-four titles at the proprietor level; the sale area included 18 different job titles, twenty-six titles were reported at the clerical level, fifty-nine job titles were reported at the skilled level of employment, thirty-eight at the semi-skilled, and twenty-nine at the service (unskilled) level.

42. STRONG, Edwin Charles. A Study to Evaluate Summer Programs of Idaho Vocational Agriculture Instructors, Thesis, M.S., 1973, University of Idaho, 58 pp., Library, University of Idaho, Moscow.

Purpose. (1) To determine the activities on which the vocational agriculture instructors placed the most emphasis during the summer months. (2) To determine the amount of time the vocational agriculture instructors spent on summer programs. (3) To determine how time was divided among activities performed by vocational agriculture instructors. (4) To determine the correlation of time spent on school related activities and community activities. (5) To aid vocational agriculture instructors in improving summer programs.

Methods. The data were obtained from Agriculture Report Number Four, which was supplied to the vocational agriculture instructors by the Idaho State Board for Vocational Education, Department of Agriculture Education. The following information was gathered: (1) activities performed by Idaho vocational agriculture instructors from 1968 to 1972, a five year period; (2) average hours spent per week from 1968 to 1972; (3) average hours spent per summer from 1968 to 1972; (4) range of hours spent per summer from 1968 to 1972; (5) distribution of instructors reporting time spent on the activities from 1968 to 1972; (6) per cent of the summer employment period spent on each of the identified activities from 1968 to 1972; (7) average home visitations made per week from 1968 to 1972; (9) range of visits made per summer from 1968 to 1972; (10) distribution of instructors reporting home visitations made from 1968 to 1972; (11) total average home visitations made by Idaho vocational agriculture instructors; (12) total average hours spent per week; (13) total average hours spent per summer; (14) range of total hours spent per summer; and (15) total hours spent by Idaho vocational agriculture instructors.

Findings. This study reveals that FFA activities accounted for 16.65 per cent of the summer employment period from 1968 to 1972. Project supervision and visiting prespective students followed FFA activities, accounting for 15.99 per cent of the summer employment period.

This study indicates that home visitations were one activity aiding in justification for the continuance of summer programs. It was found that Idaho vocational agriculture instructors made an average of 64.78 visitations per summer from 1968 to 1972.

The five year average hours per week spent by Idaho vocational agriculture instructors during the summer employment period was 43.31 hours. The five year average hours per summer was found to be 499.28 hours.

Adult farmer programs were found to have the lowest per cent of time spent during the summer employment period from 1968 to 1972

with .43 per cent. It was found, however, that Idaho vocational agriculture instructors spent 6.26 per cent of their summer employment period from 1968 to 1972 participating in community service activities.

This study reveals activities which need more emphasis to improve summer programs. It also presents information that may be useful in developing future summer programs and vocational agriculture departments. Information is also presented that could be useful in training future vocational agriculture instructors.

43. WATKINS, James E. An Instructional Program for Integrating Selected Core Curriculum Concepts with Land-Livestock Laboratory Modules. Research report, M. Ag. Ed., 1973, University of Arizona, 122 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. This study was undertaken to develop an instructional program for high school departments of vocational agriculture which would integrate selected concepts of the "Two Year Core Curriculum for Agricultural Education in Arizona" with selected land-livestock laboratory modules. A small grain production module was selected to teach plant science and related concepts and a swine production module was selected to teach animal science and related concepts.

Methods. An instructional program plan was developed that included the selected concepts, lessons and objectives necessary to teach the concepts and the related land-livestock laboratory modular activities. Then, lesson plans were developed around the concepts, lessons and objectives and related land-livestock laboratory modular activities. A time schedule and course of study was developed to make the teaching of concepts appropriate to events occurring on the modules. The guidelines from a 1970 study by Amator at the University of Arizona, "A Model Concept for Utilizing Land-Livestock Laboratories", was utilized as a basis for each developmental part of the study. A pre-test and post-test was given for the core curriculum units of instruction and the increase in student understanding was recorded. Further, a survey was sent to participating students one year after completion of the instructional program to determine the amount of utilization and degree of competency of skills learned.

Findings. It was determined that the two modules selected were suitable for integration with the selected core curriculum concepts. Lesson plans developed were adequate to teach core curriculum concepts utilizing related land-livestock laboratory modular activities. The time schedule and course of study allowed adequate time to teach each unit of instruction and still provided instruction at appropriate times for using modular activities. Student understanding increased for each unit of instruction and students had made use of the skills learned during the year following the instructional program.

44. WILHELM, Ronald R. A Comparison of Agricultural Manpower Opportunities for Goshen County, Wyoming 1965-1973, Master's Thesis, M.S., 1973, Department of Vocational Education, University of Wyoming, Laramie.

Purpose. The purpose of this study was to compare agricultural manpower opportunities (actual and projected) in off-farm occupations in 1973 with a study conducted in 1965 in Goshen County.

Method. Personal interviews were conducted in the agribusinesses in the county in 1965 and 1973. Items compared through interviews were: employment opportunities, occupational families, percent income from agriculture, job titles, numbers of employees, current needs and five-year projections.

Findings. A 68% increase in the number of people employed in the off-farm agricultural occupations. Greatest opportunities for employment were in the processing and building and construction agricultural occupational clusters.

The greatest demands for workers will be in the skilled and clerical areas.

Projections made through manpower opportunities studies in agricultural off-farm employment are valid.

45. ZURBRICK, Phillip R. Occupational Opportunities and Training Needs for Agricultural Employment in Selected Areas of Arizona, Pima County. Research Report 268, 1972, University of Arizona, 57 pages, Agricultural Experiment Station, University of Arizona, Tucson.

Purpose. The purpose was to determine occupational opportunities and the agricultural training needs for each agricultural occupation in Pima County, Arizona.

Method. Personal interviews were conducted with representatives of each of the agricultural businesses identified in the county.

Findings. A total of 258 agricultural businesses and producers were identified and surveyed. The results of the survey showed that there were 1661 employees needing some knowledge or skill in agriculture to perform the duties and functions of their jobs. The occupational area of "ornamental horticulture" was found to employ the largest number of people requiring agricultural skills and knowledge. A total of 134 job titles were identified in the county in which agriculture knowledge or skill was needed.

Agricultural mechanics was found to be the area in which the greatest number of employees required competencies. Daily care and maintenance of tractors was the competency needed by the greatest number of employees.

The educational level desired for employment varied considerably between job titles and within job titles. The few job titles, where there was general agreement as to educational level were generally those associated with state licensing requirements.

Mean minimum age at which employees would hire person for specific job titles varied from 16 to 31 years of age. The minimum age tended to be higher for job titles requiring higher educational levels and those involving increased responsibility as in the manager-foreman cluster.

46. ZURBRICK, Phillip R. Occupational Opportunities and Training Needs for Agricultural Employment in Selected Areas of Arizona. Research Series Number Three, 1973, University of Arizona, 28 pages, Department of Agricultural Education, University of Arizona, Tucson.

Purpose. The purpose of this study was to provide some indication of: (1) the occupational opportunities in agriculture and (2) the training needs for Agriculture employment in the State of Arizona.

Method. An analysis and synthesis of previous studies conducted in various parts of the state was undertaken to determine the number of employees in job title associated with each of the proposed curricula offered in vocational agriculture in Arizona.

Finding. A total of 2,341 agricultural businesses employing 19,445 persons requiring agriculture knowledge or skill in agriculture knowledge or skill in agriculture was included in the study. There were more people who required agricultural knowledge or skill employed by "crop production only" businesses than by any other type of business. On the basis of instructional programs, the largest number of employees (53%) were found in the area of agricultural production. Over 46% of the current employees needed agricultural competencies which could best be served through specialized instructional programs of a non-production nature.

Competencies in the general areas of plant science and agricultural mechanics were needed by the greatest number of employees. Competencies in animal science were required by relative few employees.

47. ZURBRICK, Phillip R. OCCUPATIONAL Component Analysis in Ornamental Horticulture. Research Report, 1974, University of Arizona, 42 pages, Agricultural Experiment Station, University of Arizona, Tucson.

Purpose. The purpose was to identify the competencies (skills and knowledge) considered by industry representatives to be most important for beginning employees in major job titles in Arizona.

Method. A simple randum sample of forty businesses known to employee persons in a major job title in ornamental horticulture was drawn. A mailed questionnaire was utilized to collect data. Non respondents were contacted and data collected by means of a personal interview. The employee was asked to appraise a list of 181 competencies and to mark each as to its importance for a beginning employee in his business and for a specific job title.

Findings. The combined evaluations from all employers for all job titles showed a total of sixty-three (63) competencies had a mean rating considered high enough to be classified as instructional. The number of instructional competencies for major job titles were: Nurseryman, 77; Nursery salesman, 56; Landscape gardener, 91; greenskeeper, 72.

Even among the most divergent of the major job titles there was a common core of competencies which should be included in an instructional program designed to prepare a person for employement in ornamental horticulture.

Human relation and communication skills, while not great in number, were considered by industry representatives to be essential for beginning employees.

The results in Arizona using the component analysis technique tended to compliment and support the results of similar studies in other states. Further, the technique of component analysis provides results which should be considered in an instructional program designed to prepare persons for gainful employment.

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*The summaries are arranged alphabetically by author and numbered consecutively. Numbers refer to the number of the study rather than to page number.

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